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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 17

Application Number: 09/683,114
Filing Date: November 20, 2001
Appellant(s): DAVIS ET AL.

Ms. Pamela J. Curbelo
For Appellants

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 26, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellants' statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellants' statement of the issues in the brief is substantially correct. The changes are as follows:

Issue 1, "whether claims 1 – 11, 13 – 21 and 23 – 38 meet the requirements of 35 U.S.C. 112, first Paragraph, for storage media other than disks and for the properties of tilt and axial displacement" is now directed solely to the issue "for properties of tilt and axial displacement" since the 112 1st Paragraph rejection for storage media other than disks has been withdrawn.

Issue 2, "whether claims 1 – 11, 13 – 18, 20, 21 and 23 – 35 meet the requirements of 35 U.S.C. 112, second paragraph ..." is now moot since the 112 2nd Paragraph rejections have been withdrawn.

(7) Grouping of Claims

Appellants' have stated that the claims stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,447,767	TANABE ET AL.	9-1995
4,673,602	NAKAYAMA ET AL.	6-1987
6,194,045	ANNACONE ET AL.	2-2001
5,972,461	SANDSTROM	10-1999
6,156,422	WU ET AL.	12-2000
4,731,155	NAPOLI ET AL.	3-1988
4,659,407	LACOTTE ET AL.	4-1987
5,875,083	ONIKI ET AL.	2-1999
4,363,844	LEWIS ET AL.	12-1982
6,347,016	ISHIDA ET AL.	2-2002
5,504,638 *(EVIDENCIARY)*	KINOSHITA ET AL.	4-1996
5,987,004 *(EVIDENCIARY)*	SUWABE	11-1999

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1 – 11, 13 – 21 and 23 – 38 stand rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The tilt and axial displacement are critical or essential properties of the invention, but are not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Specifically, appellants have not recited the test method used to measure these properties and the examiner deems that "axial displacement" is not an art recognized

property readily determined by one of ordinary skill. The Examiner notes that there is a difference between the "tilt" (or displacement from a horizontal plane) depending on whether one is measuring the media at rest sitting on a table, or at rest held within a mounting. See Suwabe (U.S. Patent No. 5,987,004) which teaches that the degree of warp is directly related to the clamping pressure/strength when held in a mounting (*Figure 4; col. 4, lines 58 – 66; and col. 5, lines 13 – 14*) and Kinoshita et al. (U.S. Patent No. 5,504,638) which teach that the clamping force causes the warp in the storage media (*Figure 12; col. 1, lines 44 – 48; and col. 11, lines 19 – 23: "When the hub 32 is mounted on the hub 121, a pressing force is exerted by the clamp 32 tending to produce a bending moment M_2 which would cause a warp of the disk 12 such that the disk 12 is convexed towards the clamp 32"*). Appellants' disclosure provides no guidance on how the tilt is to be measured. In addition, there is no description as to what is meant by "radial tilt" versus "tangential tilt", i.e. one of ordinary skill would not understand how to measure a "radial tilt" versus a "tangential tilt" and there is no description of record clearly stating how these measurements are performed.

Claim 30 stands rejected under 35 U.S.C. 102(b) as anticipated by ***or, in the alternative***, under 35 U.S.C. 103(a) as obvious over Tanabe et al. ('767).

Regarding claim 30, Tanabe et al. disclose a storage media for data, said media comprising: a metal substrate (*col. 8, lines 13 - 18*), a plastic film (*col. 9, lines 16 – 42 and lines 57 – 63; col. 9, line 67 bridging col. 10, line 19; and Figures 2F and 4F*), and a data layer disposed on said plastic film, wherein said data layer can be at least partly

read from, written to, or a combination thereof by at least one energy field, wherein said energy field comprises at least one of an electric field or a magnetic field (*col. 6, lines 54 – 62; col. 22, lines 13 – 20; and Figure 1A*).

It has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily on inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prime facie* case can be rebutted by ***evidence*** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433.

In the instant case, Tanabe et al. disclose rigid disk substrates for data media comprising a rigid core material (*col. 8, lines 12 – 18*) covered by a plastic layer (*col. 8, lines 32 – 40 and Examples*), thereby producing a recording medium possessing both a substantially identical structure to the claimed invention and also a substantially identical functional use (i.e. a data storage medium) by a substantially identical process.

Therefore, in addition to the above disclosed limitations, the presently claimed property of "a tilt of about 1° or less" would have necessarily been present because the resulting prior art structure comprises a rigid flat core coated by a thin plastic layer in a substantially identical method as appellants, wherein the rigid core material is identical to appellants' claimed core materials.

Claims 1 – 9, 15 – 18, 20, 21, 24 – 26, 32 and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045 B1) and Sandstrom ('461).

Regarding claims 1, 20, 32 and 33, Tanabe et al. disclose the claimed invention as described above. Tanabe et al. further disclose glass substrates (*col. 9, lines 50 – 56 and col. 12, lines 29 – 36*) patterning the plastic film with geographic locators (*col. 1, lines 52 – 62; col. 9, lines 57 – 63; and Figure 2F*) and a film thickness values meeting appellants' claimed thickness limitations (*col. 19, lines 38 – 48*).

Regarding the limitation "geographic locators" (claim 33), the examiner has deemed that any patterned shape is inherently a "geographic locator" since it forms a pattern on the substrate which can be read either visually or mechanically.

In addition, the limitation "embossed" (claim 33) is a limitation which depends on the process used to make the geographical locators. The limitation "embossed" is deemed to be not further limiting in so far as the structure of the product is concerned since the patentability of a product does not depend on its method of production. "If the product in the product-by-process claim is the same as or obvious from a product of the

prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. In the instant case, forming "geographic locators" by embossing or patterned deposition is deemed to produce a product that possesses a structure that is identical in appearance and functional use. Specifically, servo-tracking "geographical locators" such at pits and grooves formed from embossing or other methods are substantially identical in shape, size and appearance and are able to be used in a storage disk in a substantially identical manner, such as by laser read-out.

Tanabe et al. fail to disclose a magnetic layer on the substrate, controlling the surface roughness of the substrate to appellants' claimed range, nor explicitly that the tilt or the axial displacement of the substrate meet appellants' claimed limitations.

However, regarding the magnetic layer, Nakayama et al. teach that composite substrates for both magnetic and optical recording are equivalent in the art (*Title and col. 2, lines 9 – 15*). Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, a magnetic data layer and optical data layer are equivalents in the field of data layers formed on composite substrates. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

Regarding the tilt and axial displacement, Sandstrom teaches that both tilt and axial displacement are undesired in a recording medium and that substrates possessing high flatness are known to be desired in the recording industry to allow for high density

near field recording systems (*col. 3, lines 5 – 18; col. 3, line 64 bridging col. 4, line 14; and Figures 3 and 4*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Tanabe et al. in view of Nakayama et al., ***if not already inherently possessing said limitations***, to possess a tilt and axial displacement meeting appellants' claimed limitations as taught by Sandstrom inorder to allow for high density near field recording.

Finally, regarding the surface roughness limitation, Annacone et al. teach that substrates for recording media are required to have a very smooth surface finish of less than 10 Å inorder to allow extremely low flying heights and increased recording density (*col. 3, lines 30 – 49 and col. 4, lines 42 – 46*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Tanabe et al. in view of Sandstrom and Nakayama et al. to have a surface roughness meeting appellants' claimed limitations as taught by Annacone et al. inorder to allow extremely low flying heights and increased recording density.

Regarding claims 2 – 5 and 8, Tanabe et al. disclose substrates meeting appellants' claimed Young's modulus and material limitations (e.g. ceramic and glass substrates) (*col. 8, lines 13 – 18 and col. 12, lines 29 - 36*).

Regarding claim 6 and 7, Tanabe et al. disclose embossing the plastic film with surface features meeting appellants' claimed structural limitations (*col. 9, lines 57 – 63 and Figure 2F*).

Regarding claim 9, in addition to the above disclosed limitations, the presently claimed property of relative head slap would have ~~obviously~~ been present because the prior art product is substantially the same structure, and there is no evidence of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Regarding claims 15 - 17, Tanabe et al. disclose using thermosets as the coating layer meeting appellants' claimed limitations (*col. 9, lines 16 – 42; col. 10, lines 43 – 47; and col. 20, lines 1 - 3*). The limitation "at least partially ... resin" is a product-by-process limitation and is not further limiting in so far as the structure of the product is concerned for the reasons cited above.

Regarding claim 18, Tanabe et al. disclose thickness values meeting appellants' claimed thickness limitations (*col. 19, lines 38 – 48 and col. 26, lines 38 – 48*).

Regarding claim 21, it would have been obvious to one of ordinary skill in the art at the time of the appellant's invention to minimize the tilt of the substrate, ***if not already inherently possessing said limitation***, to meet appellants' claimed property limitations as taught by Sandstrom inorder to allow for high density near field recording.

Regarding claims 24 and 25, Tanabe et al. disclose film thickness values meeting appellants' claimed thickness limitations (*col. 19, lines 38 – 48*).

Regarding claim 26, Tanabe et al. disclose surface features meeting appellants' claimed structural limitations (*col. 9, lines 57 – 63 and Figure 2F*).

Claims 10 and 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) as applied above, and further in view of Wu et al. ('422).

Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) disclose the claimed invention as described above.

None of the above disclose a data layer meeting appellants' claimed coercity limitations.

However, Wu et al. teach data layers meeting appellants' claimed limitations for use as high areal recording density media (*col. 1, lines 16 – 20 and Figures*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) to include a data layer meeting appellants' claimed coercivity limitations as taught by Wu et al. inorder to form a high areal recording density media.

Claims 13, 14, 29, 34 and 35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) as applied above, and further in view of Napoli et al. ('155).

Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) disclose the claimed invention as described above.

Regarding claims 13, 14, 29, 34 and 35, none of the above disclose glass temperatures of the plastic film meeting appellants' claimed property limitations, though Nakayama et al. ('602) teach that the polymer film should have a glass temperature as high as possible inorder to have excellent mechanical and surface properties (*col. 3, lines 15 – 34*).

However, Napoli et al. teach that typical embossing temperatures are up to 250 °C and beyond and that the polymer to be embossed must be capable of withstanding the processing temperatures (*col. 2, lines 52 – 55*). The higher the glass temperature of the polymer, the better the polymer will be able to withstand high temperature processing and enable increased molding cycle times.

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) to include a plastic film possessing a glass temperature meeting appellants' claimed limitations as taught by Nakayama et al. and Napoli et al. inorder to produce a substrate capable of withstanding high processing temperatures as well as possessing excellent mechanical and surface properties.

Claims 19 and 38 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) as applied above, and further in view of Lacotte et al. ('407).

Regarding claims 19 and 38,Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) disclose the claimed invention as described above.

None of the above disclose a double sided recording medium

However, Lacotte et al. teach that it is old in the art to make single or double sided media depending on the desired end use (i.e. for twice the recording density) (*col. 1, line 29*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) to utilize a double sided recording media meeting appellants' claimed structural limitations as taught by Lacotte et al. inorder to produce a medium possessing twice the recording density.

Claims 23, 27, 28 and 31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) as applied above, and further in view of Oniki et al. ('083).

Tanabe et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) disclose the claimed invention as described above.

None of the above disclose overall media thickness values meeting appellants' claimed thickness limitations (claims 23 and 31) nor the depth of the patterned surface features meeting appellants' claimed structural limitations (claims 27 and 28).

However, both the overall thickness of the medium and the depth of the patterned surface features are cause-effective variables which can be optimized to control the physical (stiffness, mass, etc.) and mechanical (surface roughness, servo-tracking ability, etc.) properties of the substrate. Oniki et al. teach substrate thickness values fully encompassing appellants' claimed thickness range for total medium thickness (*col. 3, lines 63 – 67*) and Oniki et al. also disclose depths of patterned surface features meeting appellants' claimed depth limitations (*Figure 8 and col. 6, lines 36 – 44 and lines 53 – 59*).

Therefore, it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the overall medium thickness and the depth of the patterned surface features through routine experimentation in the absence of a showing of criticality in the claimed overall medium thickness and embossed surface feature depth, especially given the teachings in Oniki et al. regarding the ranges useable for both variables. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 30 stands rejected under 35 U.S.C. 102(b) as anticipated by ***or, in the alternative***, under 35 U.S.C. 103(a) as obvious over Lewis et al. ('844).

Regarding claim 30, Lewis et al. disclose a storage media for data, said media comprising: a metal substrate (*col. 2, lines 36 – 40*), a plastic film (i.e. the embossable layer), and a data layer disposed on said plastic film, wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field,

wherein said energy field comprises at least one of an electric field or a magnetic field (*col. 1, lines 6 – 15; col. 2, lines 50 – 65; and Figures*).

In the instant case, Lewis et al. disclose substrates comprising a rigid core material (*metal*) covered by a plastic layer, thereby producing a recording medium possessing both a substantially identical structure to the claimed invention and also a substantially identical functional use (i.e. a data storage medium) by a substantially identical process.

Therefore, in addition to the above disclosed limitations, the presently claimed property of "a tilt of about 1° or less" would have necessarily been present because the resulting prior art structure comprises a rigid flat core material coated by a thin plastic layer in a substantially identical method as appellants, wherein the rigid core material is identical to appellants' claimed core materials.

Claims 1 – 9, 14 – 21, 23 – 28, 31 – 33 and 38 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. ('767) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461).

Regarding claims 1, 19, 20 and 31 - 33, Lewis et al. disclose the claimed invention as described above.

Lewis et al. further disclose double sided recording media (*col. 2, lines 22 – 67; col. 13, lines 26 – 42; claim 20 and Figures*), embossing the plastic film with "geographic locators" (*col. 2, lines 22 - 36 and Figures*) and a film thickness meeting appellants' claimed thickness limitations (*col. 5, lines 31 - 36*). The examiner has deemed that any

embossed shape is inherently a "geographic locator" since it forms a pattern on the substrate which can be read either visually or mechanically.

While Lewis et al. fails to explicitly disclose glass substrates, Lewis et al. disclose art recognized equivalent substrates (e.g. metal, polymer and ceramic) (*col. 2, lines 36 – 43*) and it would have been within the knowledge of one of ordinary skill in the art to use glass substrates if transparency and low weight were desired.

Lewis et al. fail to disclose a magnetic layer on the substrate, controlling the surface roughness of the substrate to appellants' claimed range, nor explicitly that the tilt or the axial displacement of the substrate meet appellants' claimed limitations.

However, regarding the magnetic layer, Nakayama et al. teach that composite substrates for both magnetic and optical recording are equivalent in the art (*Title and col. 2, lines 9 – 15*). Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, a magnetic data layer and optical data layer are equivalents in the field of data layers formed on composite substrates.

Regarding the tilt and axial displacement, Sandstrom teaches that both tilt and axial displacement are undesired in a recording medium and that substrates possessing high flatness are known to be desired in the recording industry to allow for high density near field recording systems (*col. 3, lines 5 – 18; col. 3, line 64 bridging col. 4, line 14; and Figures 3 and 4*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Lewis et al. in view of Nakayama et

al., ***if not already inherently possessing said limitations***, to possess a tilt and axial displacement meeting appellants' claimed limitations as taught by Sandstrom inorder to allow for high density near field recording.

Finally, regarding the surface roughness limitation, Annacone et al. teach that substrates for recording media are required to have a very smooth surface finish of less than 10 Å inorder to allow extremely low flying heights and increased recording density (*col. 3, lines 30 – 49 and col. 4, lines 42 – 46*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Lewis et al. in view of Sandstrom and Nakayama et al. to have a surface roughness meeting appellants' claimed limitations as taught by Annacone et al. inorder to allow extremely low flying heights and increased recording density.

Regarding claims 2 – 5 and 8, Lewis et al. disclose substrates meeting appellants' claimed Young's modulus and material limitations, or their equivalents (e.g. ceramic and metal substrates are equivalent to glass substrates for the reasons cited above) (*col. 2, lines 36 - 43*).

Regarding claims 6, 7, 27 and 28, Lewis et al. disclose embossing the plastic film with surface features meeting appellants' claimed structural limitations (*col. 13, lines 43 – 62 and Figures*).

Regarding claim 9, in addition to the above disclosed limitations, the presently claimed property of relative head slap would have obviously been present because the prior art product is substantially the same structure, and there is no evidence of record

showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Regarding claim 14 - 17, Lewis et al. disclose resins meeting appellants' claimed composition limitations (*col. 11, line 62 bridging col. 12, line 2*). The limitation "at least partially ... resin" is a product-by-process limitation and is not further limiting in so far as the structure of the product is concerned for the reason cited above.

Regarding claims 18, 23 - 25, Lewis et al. disclose thickness values meeting appellants' claimed thickness limitations (*col. 5, lines 30 - 40*).

Regarding claim 21, it would have been obvious to one of ordinary skill in the art at the time of the appellants' invention to minimize the tilt of the substrate, ***if not already inherently possessing said limitation***, to meet appellants' claimed property limitations as taught by Sandstrom inorder to allow for high density near field recording.

Regarding claims 26 - 28, Lewis et al. disclose embossed surface features meeting appellants' claimed structural limitations (*col. 13, lines 43 - 62*).

Regarding claim 38, Lewis et al. disclose substrate thickness values meeting appellants' claimed thickness limitations (*examples*).

Claims 10 and 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. ('844) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) as applied above, and further in view of Wu et al. ('422).

Lewis et al. ('844) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) disclose the claimed invention as described above.

None of the above disclose a data layer meeting appellants' claimed coercivity limitations.

However, Wu et al. teach data layers meeting appellants' claimed coercivity limitations for use high areal recording density media (col. 1, lines 16 – 20 and Figures).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Lewis et al. ('844) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) to include a data layer meeting appellants' claimed limitations as taught by Wu et al. inorder to form a high areal recording density media.

Claims 13, 29, 34 and 35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. ('844) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) as applied above, and further in view of Napoli et al. ('155).

Lewis et al. ('844) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) disclose the claimed invention as described above.

None of the above disclose glass temperatures of the plastic film meeting appellants' claimed property limitations, though Nakayama et al. ('602) teach that the polymer film should have a glass temperature as high as possible inorder to have excellent mechanical and surface properties (*col. 3, lines 15 – 34*).

However, Napoli et al. teach that typical embossing temperatures are up to 250 °C and beyond and that the polymer to be embossed must be capable of withstanding the processing temperatures (*col. 2, lines 52 – 55*). The higher the glass temperature of

the polymer, the better the polymer will be able to withstand high temperature processing.

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellant's invention to modify the device of Lewis et al. ('844) in view of Nakayama et al. ('602), Annacone et al. ('045) and Sandstrom ('461) to include a plastic film possessing a glass temperature meeting appellants' claimed limitations as taught by Nakayama et al. and Napoli et al. inorder to produce a substrate capable of withstanding high processing temperatures as well as possessing excellent mechanical and surface properties.

Claim 30 stands rejected under 35 U.S.C. 102(e) as anticipated by ***or, in the alternative***, under 35 U.S.C. 103(a) as obvious over Ishida et al. ('016 B1).

Regarding claim 30, Ishida et al. disclose a storage media for data, said media comprising: a metal substrate, a plastic film (*col. 22, lines 39 - 42*), and a data layer disposed on said plastic film, wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field, wherein said energy field comprises at least one of an electric field or a magnetic field (*col. 1, lines 9 – 15 and col. 23, lines 4 - 21 and Figures*).

In the instant case, Ishida et al. disclose rigid disk substrates for data media comprising a rigid core material (*col. 21, lines 13- 15*) covered by a plastic layer (*col. 22, lines 39 – 42 and Examples*), thereby producing a recording medium possessing both a

substantially identical structure to the claimed invention and also a substantially identical functional use (i.e. a data storage medium) by a substantially identical process.

Therefore, in addition to the above disclosed limitations, the presently claimed property of "a tilt of about 1° or less, measured in a resting state, wherein said tilt is selected from the group consisting of radial tilt and tangential tilt" would have necessarily been present because the resulting structure comprises a rigid flat core coated by a thin plastic layer in a substantially identical method as appellants, wherein the rigid core material is identical to appellants' claimed core materials.

Claims 1 – 11, 14 – 17, 20, 21, 24 – 26, 32 and 33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. ('016) in view of Annacone et al. ('045) and Sandstrom ('461).

Regarding independent claims 1, 20, 32 and 33, Ishida et al. disclose the claimed invention as described above. Ishida et al. further disclose embossing the plastic film with geographic locators (col. 24, lines 35 - 42), optical or magnetic data layers (col. 30, lines 12 – 36), a glass substrate and a plastic film thickness meeting appellants' claimed limitations (col. 23, lines 4 – 13). The examiner has deemed that any embossed shape is inherently a "geographic locator" since it forms a pattern on the substrate which can be read either visually or mechanically.

Ishida et al. fail to disclose controlling the surface roughness of the substrate to appellants' claimed range, nor explicitly that the tilt or the axial displacement of the substrate meets appellants' claimed limitations.

However, Sandstrom teaches that both tilt and axial displacement are undesired in a recording medium and that substrates possessing high flatness are known to be desired in the recording industry to allow for high density near field recording systems (*col. 3, lines 5 – 18; col. 3, line 64 bridging col. 4, line 14; and Figures 3 and 4*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Ishida et al., ***if not already inherently possessing said limitations***, to possess a tilt and axial displacement meeting appellants' claimed limitations as taught by Sandstrom inorder to allow for high density near field recording.

Regarding the surface roughness limitation, Annacone et al. teach that substrates for recording media are required to have a very smooth surface finish of less than 10 Å inorder to allow extremely low flying heights and increased recording density (*col. 3, lines 30 – 49 and col. 4, lines 42 – 46*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Ishida et al. in view of Sandstrom to have a surface roughness meeting appellants' claimed limitations as taught by Annacone et al. inorder to allow extremely low flying heights and increased recording density.

Regarding claims 2 – 5 and 8, Ishida et al. disclose substrates meeting appellants' claimed Young's modulus and material limitations, (e.g. ceramic and glass substrates) (*col. 21, lines 13 - 15*).

Regarding claims 6 and 7, Ishida et al. disclose embossing the plastic film with surface features meeting appellants' claimed structural limitations (*col. 10, lines 4 – 9 and Figures*).

Regarding claim 9, in addition to the above disclosed limitations, the presently claimed property of relative head slap would have obviously been present because the prior art product is substantially the same structure, and there is no evidence of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Regarding claims 10 and 11, Ishida et al. disclose data layers possessing coercive force values meeting appellants' claimed coercivity limitations (*col. 3, lines 25 – 35*).

Regarding claims 14 - 17, Ishida et al. disclose resins meeting appellants' claimed composition limitations (*col. 23, lines 4 - 13*). The limitation "at least partially ... resin" is a product-by-process limitation and is not further limiting in so far as the structure of the product is concerned for the reason cited above. While Ishida et al. fail to disclose whether the polyimide is a thermoplastic polyimide or thermoset polyimide, the examiner deems that one of ordinary skill in the art would recognize that thermoset and thermoplastic polyimides form functionally equivalent plastic layers and that whether it is a thermoplastic or thermoset merely controls whether it is cured or crosslinked.

Regarding claim 21, it would have been obvious to one of ordinary skill in the art at the time of the appellants' invention to minimize the tilt of the substrate, ***if not***

already inherently possessing said limitation, to meet appellants' claimed property limitations as taught by Sandstrom inorder to allow for high density near field recording.

Regarding claims 24 and 25, Ishida et al. disclose thickness values meeting appellants' claimed thickness limitations (*col. 23, lines 4 - 13*).

Regarding claims 26, Ishida et al. disclose embossed surface features meeting appellants' claimed structural limitations (*col. 24, lines 35 – 42 and Figures*).

Claims 13, 29, 34 and 35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. in view of Annacone et al. and Sandstrom as applied above, and further in view of Nakayama et al. ('602) and Napoli et al. ('155).

Regarding claims 13, 29, 34 and 35, Ishida et al. in view of Annacone et al. and Sandstrom disclose the claimed invention as described above.

None of the above disclose glass temperatures of the plastic film meeting appellants' claimed property limitations.

However, Nakayama et al. ('602) teach that the polymer film should have a glass temperature as high as possible inorder to have excellent mechanical and surface properties (*col. 3, lines 15 – 34*). Napoli et al. further teach that typical embossing temperatures are up to 250 °C and beyond and that the polymer to be embossed must be capable of withstanding the processing temperatures (*col. 2, lines 52 – 55*). The higher the glass temperature of the polymer, the better the polymer will be able to withstand high temperature processing.

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Ishida et al. in view of Annacone et al. and Sandstrom to include a plastic film possessing a glass temperature meeting appellants' claimed limitations as taught by Nakayama et al. and Napoli et al. inorder to produce a substrate capable of withstanding high processing temperatures as well as possessing excellent mechanical and surface properties.

Claims 18, 23, 27, 28 and 31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. in view of Annacone et al. and Sandstrom as applied above, and further in view of Oniki et al. ('083).

Regarding claims 18, 23, 27, 28 and 31, Ishida et al. in view of Annacone et al. and Sandstrom is relied upon as above.

None of the above disclose substrate and overall media thickness values meeting appellants' claimed thickness limitations (claims 18, 22, 23 and 31) nor the depth of the embossed surface features meeting appellants' claimed structural limitations (claims 27 and 28).

However, the substrate thickness, the overall thickness and the depth of the embossed surface features are cause-effective variables which can be optimized to control the physical (stiffness, mass, etc.) and mechanical (surface roughness, servo-tracking ability, etc.) properties of the substrate. Oniki et al. teach substrate thickness values fully encompassing appellants' claimed range for total medium thickness and

substrate thickness (*col. 3, lines 63 – 67*) and Oniki et al. also disclose depths meeting appellants' claimed limitations (*Figure 8 and col. 6, lines 36 – 44 and lines 53 – 59*).

Therefore, it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the substrate + plastic layer thickness, the overall medium thickness and the depth of the embossed surface features through routine experimentation in the absence of a showing of criticality in the claimed thickness values and embossed surface feature depth, especially given the teachings in Oniki et al. regarding the ranges useable for these variables.

Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. in view of Annacone et al. and Sandstrom as applied above, and further in view of IDS reference Lacotte et al. ('407).

Ishida et al. in view of Annacone et al., Sandstrom is relied upon as above.

None of the above disclose a double sided recording medium

However, Lacotte et al. teach that it is old in the art to make single or double sided media depending on the desired end use (i.e. for twice the recording density) (*col. 1, line 29*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the appellants' invention to modify the device of Ishida et al. in view of Annacone et al., Sandstrom to include a double sided recording media as taught by Lacotte et al. inorder to produce a medium possessing twice the recording density.

Claim 38 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. in view of Annacone et al. and Sandstrom in view of Lacotte et al. ('407) as applied above, and further in view of Oniki et al. ('083).

Ishida et al. in view of Annacone et al., Sandstrom and Lacotte et al. is relied upon as above.

None of the above teach controlling the thickness to within appellants' claimed thickness limitation.

However, the substrate thickness is a cause-effective variable which can be optimized to control the physical (stiffness, mass, etc.) properties of the substrate. Oniki et al. teach substrate thickness values fully encompassing appellants' claimed range for total medium thickness and substrate thickness (*col. 3, lines 63 – 67*).

It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the substrate thickness through routine experimentation in the absence of a showing of criticality in the claimed thickness values, especially given the teachings in Oniki et al. regarding desired thickness values.

(11) Response to Argument

35 U.S.C. 112 1st Paragraph – "tilt" and "axial displacement"

Appellants argue that both "tilt" and "axial displacement peak" are art recognized terms and, therefore, are capable of being measured by known techniques. Appellants further argue that "at rest" excludes being subject to a clamping force. The Examiner respectfully disagrees that the terms "tilt" and "axial displacement peak" are sufficiently enabled.

The Examiner notes that appellants have provided no evidence as to the allegation that "axial displacement peak" is an art recognized term with known methods of measurement. Sandstrom ('461), relied upon to teach what is known in the art as "axial displacement" (*Figure 4*) or "deflection" (*col. 5, lines 13 and 14 and col. 10, line 27 bridging col. 12, line 2*) gives detailed measurements on how to measure their "displacement", specifically "to obtain the deflection data, each sample was loaded with a force of approximately 5 grams force (gf) at a radius from disk center of approximately 60 mm ..." (*col. 11, lines 6 – 30*). The Examiner deems that there is clearly no single art recognized method of measuring "deflection", since the values obtained will depend both on the loading force and the relative location from the disk center. In addition, it is unclear whether "axial displacement" is the same property appellants' call "axial displacement peak".

With regard to "tilt", the Examiner notes that there is no evidence suggesting that "at rest" means not held in a mounting and that one of ordinary skill in the art would not be readily appraised of how the measurement was done, and hence, the full scope of

the claims. Furthermore, there is no description as to what is meant by "radial tilt" versus "tangential tilt", and there is no description of record clearly stating how these measurements are performed.

ART REJECTIONS

Appellants' claims stand or fall together and the Examiner's response will therefore be directed to the arguments versus the broadest independent claims pending in the present application.

102 REJECTIONS: LEWIS ET AL., TANABE ET AL., ISHIDA ET AL.

Appellants argue that Lewis et al. teach that "flatness is not necessary" and therefore "Lewis et al. fail to teach tilt" (page 15 of Appeal Brief), as well as Ishida et al. teaching that since the "substrate "has flexibility to a certain extent" ... an artisan would not believe that tilt is relevant" (page 16). Appellants further argue that "no evidence showing that the tilt is necessarily present has been provided by the Examiner" with respect to Lewis et al. (pages 15 and 20 - 22), Ishida et al. (pages 16 and 20 - 22) and Tanabe et al. (page 20 - 22). Finally, appellants have attempted to rely upon the declaration of Dr. Reitz "to explain that the elements are not inherent features of these references, and to explain what one of skill in the art would understand the references to mean" (pages 17 – 18).

The Examiner reminds appellants that the Patent Office is incapable of conducting experiments to determine if a property is actually inherent in the prior art. The courts have recognized this by allowing the PTO to shift the burden to appellants' to disprove a claim of inherency where *sound basis* has been present. The *sound basis* includes "where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes". *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Since the claimed and prior art products *are* substantially identical in structure and composition, the Examiner deems that the requirement of providing a *sound basis* has been met. Therefore, a shifting of the burden to appellants is proper since "when the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

The Examiner has considered appellants' declaration of Dr. Reitz, but has not found it convincing. Specifically, the teachings in Lewis et al. regarding flatness is not directed to "tilt" or "axial displacement" but to the surface roughness characteristics of a single coating layer on the disk. This is unrelated to whether the disk, at rest, shows any warpage or "tilt". Similarly, the comments in Ishida et al. are also not related to the "tilt" or warpage measured at rest. Ishida et al. merely indicate that when a force is applied to the medium, it has some degree of flexibility. This is *not* equivalent to saying that when the medium is lying at rest on a surface it possesses warpage or "tilt". Dr. Reitz's declaration neither provides experimental evidence, nor explicit teaching or

theoretical calculations supporting the allegations that the claimed properties would not be necessarily present in the prior art embodiments.

103 REJECTIONS: LEWIS ET AL. (BASE REFERENCE), TANABE ET AL. (BASE REFERENCE), ISHIDA ET AL. (BASE REFERENCE)

Appellants argue that the Examiner has relied upon "a large number of references to reject each claim, i.e., typically at least 4 references" (page 23), as well as relied upon impermissible hindsight (page 23). Appellants' summarize the Examiner's arguments as being based on "(1) the alleged inherency of tilt; (2) that Nakayama et al. teach the interchangeability of magnetic and optical media; and (3) the picking and choosing the various information from the references is acceptable", each of which fail to render a *prima facie* case of obviousness (pages 24 - 27).

In response to appellants' argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

In response to appellants' argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the appellant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Regarding the "alleged inherency of tilt", the Examiner notes that the 103 rejections presently of record rely both on a case of inherency, ***as well as providing motivation to optimize the "tilt" to within appellants' claimed range.***

Regarding the argument that magneto-optical, optical and magnetic substrates are not analogous art, appellants are reminded that "the test for obviousness is not whether features of the secondary reference may be bodily incorporated into the primary reference's structure, nor whether the claimed invention is expressly suggested in any one or all of the references, rather the test is what the combined teachings would have suggested to those of ordinary skill in the art." *Ex parte Martin* 215 USPQ 543, 544 (PO BdPatApp 1981). In the instant case, Nakayama et al. clearly teach that substrates useable in optical storage media (especially a near-field optical layer) are also useable for magnetic storage medium (*"This invention relates to a substrate plate for use in a magnetic or optical disk (including a magnetooptical disk)" col. 1, lines 6 – 10*). The declaration of Dr. Reitz is mere allegation and is not found convincing in view of the explicit teachings in the prior art to the contrary, as exemplified by Nakayama et al. above.

Finally, appellants argue that Sandstrom is not combinable with the other references of record because Sandstrom requires an extremely thick substrate to meet the limitation of low warp and/or tilt. The examiner respectfully disagrees.

The examiner notes that Sandstrom is merely relied upon as a teaching reference to illustrate that minimizing "tilt" and/or "warp" is known in the art. At no point does the examiner maintain or suggest substituting the structure of Sandstrom for the structure of Tanabe et al., Lewis et al. or Ishida et al. (see rejections of record).

For the above reasons, it is believed that the rejections should be sustained.

(11) Conclusion

The IDS filed June 16, 2003 has been considered.

Respectfully submitted,

KMB
August 6, 2003

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ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18
Stylesheet Version v18.0

Title of Invention	DATA STORAGE MEDIA

Application Number: 09/683114
Confirmation Number: 9349
First Named Applicant: John Davis
Attorney Docket Number: 08CN8803-25
Art Unit: 1773
Examiner: Kevin Bernatz
Search string: (4235835 or 4272474 or 4519065 or 4851494 or 4976902 or 5063097 or 5082696 or 5591501 or 5657304 or 5688574 or 5730922 or 5800904 or 5911943 or 6094413 or 6207095 or 6328920 or 6492035 or 6544667).pn.

Certification: This Information Disclosure Statement was submitted under the following conditions, which satisfies the requirement under 37 CFR 1.97(e). The filer certified:

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement.

US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
MG	1	4235835	1980-11-25	Stutzman, et al.	A1	264	328.2
	2	4272474	1981-06-09	Crocker	A1	264	176R
	3	4519065	1985-05-21	Lewis, et al.	A1	369	275
	4	4851494	1989-07-25	Eldin, et al.	A1	528	170
	5	4976902	1990-12-11	Oblerle	A1	264	54
	6	5063097	1991-11-05	Hirota, et al.	A1	428	65

	7	5082696	1992-01-21	Sharp	A1	427	55
	8	5591501	1997-01-07	Ovshinsky, et al.	A1	428	64.1
	9	5657304	1997-08-12	Lehureau	A1	369	109
	10	5688574	1997-11-18	Tamura, et al.	A1	428	64.1
	11	5730922	1998-03-24	Babb, et al.	A1	264	258
	12	5800904	1998-09-01	Hallman, et al.	A1	428	156
	13	5911943	1999-06-15	Minghetti, et al.	A1	264	516
	14	6094413	2000-07-25	Guerra	A1	369	275.1
	15	6207095	2001-03-27	Gosetti	B1	264	250
	16	6328920	2001-12-11	Uchiyama, et al.	B1	264	255
	17	6492035	2002-12-10	Yamaguchi, et al.	B1	428	611
	18	6544667	2003-04-08	Hosoe, et al.	B1	428	664

Remarks

Note: Remarks are not for responding to an office action.

The attached IDS is a resubmission of an IDS that was mailed on June 13, 2003. It was discovered that the transmittal for the IDS mailed on June 13, 2003 inadvertently cited 37 CFR 1.97 (b) or 1.97(c) instead of citing 37 CFR 1.97(d). As a result, we are resubmitting the IDS along with the appropriate fee for submission of an IDS after a final action. If there are any questions, please contact the attorney of record at 860-286-2929.

Signature

Examiner Name	Date
	8/6/07